With compliments of the Authors.

MONOGRAPH

OF

THE CANADIAN CARYOPHYLLACEÆ,

AS REPRESENTED

Within the Valley of the St. Lawrence and Great Lakes,

BY

J. GIBSON, B.A., and J. MACOUN, M.A.,
Professors in Albert College.

The present paper is the first of an intended series of Monographs upon the plants of Central and Eastern Canada. It is the intention of the writers to make these memoirs component parts of a Flora Canadensis in design.

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Diagnosis. Herbaceous plants with stems tumid at the articulations. Leaves always opposite and entire. Flowers cymose, symmetrical and regular. Sepals 4 or 5, imbricated in the bud, continuous with the peduncle, persistent, distinct, or cohering in a tube. Petals 4-5, very often stamen-like in appearance, inserted upon the pedicel of the ovary, unguiculate or not, bifid or entire, but sometimes altogether wanting. Stamens distinct, generally twice as many as the sepals, to which they are opposite except in *Mollugo*, rarely equal or less in number. Ovary free, 1-5 celled, with amphitropous and campylotropous ovules. Styles 2-5, distinct or partly united, stigmatic along the inner surface. Fruit generally a 1-celled capsule, rarely 2-5 celled, either opening at the top or loculicidal. Seeds numerous, generally definite in number. Embryo external, curved around the mealy albumen,

Properties. The Pinkworts, as a rule, are entirely destitute of active properties. Among Canadian representatives of this order, however, two examples may be cited as being decidedly deleterious. Malapert and M. Bonet have shown that Saponaria officinalis and Lychnis (*Agrostemma Githago* L. and Gray, 2nd Ed.) are of a poisonous nature, ascribing this quality to the existence, especially in their roots and seed, of a certain quantity of Saponine. A few of the pinks, such as the Dianthus and Lychnis, are highly prized as ornamental flowers; but the majority of Canadian examples are insignificant weeds, abounding for the most part in waste sandy soils, road sides, and cultivated fields.

Distribution.—The Caryophyllaceæ are natives principally of the frigid and temperate zones. The order. in common with several others, may be considered as representing the boreal type in the Flora of Central Canada. Critically speaking, however. the Cloveworts are either Arctic or Alpine in character, and as a consequence are but scantily represented in regions essentially of a sub-arctic or sub-alpine type of vegetation. Here therefore we have a solution of the fact that, in the Flora of the Lake Superior region—a region whose plants of a boreal character are distinctly of a sub-arctic nature, we find so few representative species of this order. Agassiz, in his work on the Natural History and Botany of this District, enumerates but five species in all, viz :—1. Stellaria longipes, Goldie. 2. S. borealis, Bigelow. 3. Cerastium arvense, L. 4. Sagina nodosa, Fenzl. 5. Alsine stricta (*Arenaria stricta*, Michx, *Alsine Michauxii*, Fenzl.) To this list the writers are enabled to make, from their own collections on the Eastern and Southern shores, the following interesting additions :—6, Stellaria media, Smith. 7. Cerastium viscosum, L. 8. Silene Antirrhina. L. 9. Stellaria graciles, Richardson. Many species, on the other hand, are met with in the Tropics of both Hemispheres ; but these usually occupy high elevations, reaching in most cases the limits of eternal snow. According to Humboldt the Pinkworts constitute 1-17 of the flowering plants of Scandinavia, 1-22 of France, and 1-27 of Germany. In the valley of the St. Lawrence and Great Lakes they are represented by 12 genera, including 38 species ; in the Northern U. States by 16 genera and 52 species ; and between the parallels 25° and 45° N. latitude, by 70 species in all.

SYNOPSIS.

The order, as constituted by Endleicher is naturally divisible into four Suborders, two of which are capable of being further subdivided into Tribes. The following are the Natural Suborders:

I. CARYOPHILLINEÆ.
II. ILLECEBRINEÆ.
III. SCLERANTHINEÆ.
IV. MOLLUGINEÆ.

Suborder I. Caryophyllineæ.

Exstipulate. Petals rarely absent.

Tribe I. Sileneæ. Sepals united into a tube, and opposite the stamens when the latter are of the same number. Both petals and stamens inserted on the stipe of the ovary. Many of the flowers are large and highly ornamental. Includes the following genera:

1. Saponaria—styles 2.
2. Vaccaria—styles 2 calyx 6, angled and 5-toothed.
3. Silene—styles 3.
4. Lychnis—styles generally 5, rarely 4.

} Calyx bractless and 10 stamens.

Tribe II. Alsineæ.—Sepals separate or nearly so, and opposite the stamens when the latter are of the same number. Petals either 2-parted (Cerastium & Stellaria) or undivided (Arenaria). Sometimes the petals are wanting or almost obselete, as in Sagina apetala of the U. States, but in the St. Lawrence valley we have no apetalous representatives of the Tribe, with the exception of the Stellaria borealis. Ovary sessile; generally small inconspicuous herbs. Includes the following genera:

1. Cerastium, styles 5, Capsule 8-10 toothed } Petals 2-parted
2. Stellaria, styles 3, Capsule with 6-10 valves. } rarely wanting.
3. Arenaria, styles 2, Capsule with 3-6 valves. } Petals entire.
4. Sagina, styles 4-5. Capsule with 4-5 valves. } Petals entire.

SUBORDER II. ILLECEBRINEÆ.

Leaves with dry scale-like stipules. Petals present, without long claws, often stamen-like.

Tribe III.—Sperguleæ—Sepals distinct or nearly so; Styles 3-5. Capsule 1-celled and many-seeded. Low herbs flowering all summer, and found mostly at or near the neighborhood of the sea coast or salt marshes. Includes the following genera:

1. Spergula. Petals white. Leaves in whorls.
2. Spergularia. Petals red. Leaves opposite, filiform or linear.

SUBORDER III. SCLERANTHINEÆ.

Exstipulate. Petals wanting. Capsules 1-celled and 1-seeded.

1. Scleranthus. Styles 2. The one-seeded utricle enclosed in an indurated nut formed by the union of the 5 sepals.

SUBORDER IV. MOLLUGINEÆ.

Exstipulate. Petals wanting. Capsule 3-celled.

1. Mollugo. Styles 3. Stamens hypogynous. Leaves in whorls at the joints. Flowers small and white.

I. SAPONARIA, Linn. Soapwort.

Calyx monophyllous, tubular, terete, 5-toothed, and without scales at the base. Petals 5, unguiculate. Stamens 10. Styles 2. Capsule almost sessile, oblong, 1-celled at the base and 4-toothed at the apex. Flowers in dense cymes. Named from *sapo*, soap; the plant yielding a mucilagenous juice when mixed with water.

S. officinalis. Linn. *Bouncing Bet.* Perennial. 1°-1½° high, with a stout, smooth, erect cylindrical stem. Leaves ovate, lanceolate, connate, strongly 3-ribbed, 2–3′ long, about ⅓ as wide, and very acute. Flowers very large, generally double, rose-colored or white, in dense cymose clusters. Calyx cylindrical, nearly glabrous. Crown of petals linear, limb obcordate. Naturalized. Very common around the fences of old gardens, and on the sites of old houses. This seems to have been one of the first flowers cultivated by the early settlers along the Bay of Quinte, and at the present time is seen around every farm-house in Prince Edward Co. That it was in former times cultivated as a garden ornament, there can be no doubt; and that, if placed side by side with many of our modern introductions, it would rival them in beauty, is equally certain. It is interesting to observe that here in its new home it is found in precisely the same situation as in England. There it surrounds the cottages of the poor; here it is emphatically the poor man's flower. In the Atlantic States it is found from Maine to Georgia; while we have no notice of its occurrence in any part of the Dominion except Ontario. July, Aug.

II. VACCARIA, Medik. Cow-Herb.

Calyx pyramidal, naked at the base, 5-angled, and 5-toothed. Bracts membranous, acute. Leaves ovate-lanceolate. Annual herbs with pale-red flowers on long stalks.

1. **V. vulgaris,** Medik. (Saponaria Vaccaria, Linn. Saponaria vulgaris, Medik.) Annual. Whole plant smooth. Stem branching foot or more high. Leaves ovate, lanceolate, sessile, broad at the base, and tapering to an acute apex. Flowers in paniculate cymes, which repeatedly fork in threes, the central one being invariably a single flower; pale-red, on very long stalks. Calyx pyramidal, 5-angled, smooth. Bracts membranous, acute.

Introduced, scarcely naturalized. As yet found only in cultivated fields and gardens at Belleville and Owen Sound. July and Aug.

III. SILENE, Linn. Catchfly.

Calyx monophyllous, cylindrical, often ventricose, 5-toothed, without scales at the base. Petals 5, unguiculate, generally crowned at the mouth, with limb often notched or bifid, inserted with the 10 stamens on the stipe of the ovary. Styles 3. Capsule 3-celled at the base, 6-toothed at the apex, and many seeded. Leaves mostly connate, Flowers solitary or in cymose clusters. Name supposed to be derived from *saliva*, in allusion to a viscid moisture observed on the stocks and calyx of many species.

1. **S. inflata,** Smith. *Bladder Campion.* Perennial. Stem erect, a foot or more high; branching, glabrous and glaucous. Leaves opposite, ovate-lanceolate, rather acuminate. Flowers in loose cymose leafless panicles, drooping. Calyx much inflated, ovoid.globular, elegantly veined with purple. Petals white, cleft half-way down, the narrow segments hardly crowned. Stamens exserted. Styles much longer than the stamens, much exserted. Whole plant glaucous, variable in tho size of the leaves and flowers. Often two feet high in good soils; leaves and flowers in proportion. Sparingly introduced in a few localities.

Dry fields near Belleville, very scarce; vicinity of Quebec (Mrs. Percival); sandy fields two miles west of Prescott, rare (B. Billings Jr.) Field in Hamilton city (Judge Logie). Loretto, Montreal, and Tamiscouta, (Dr. Maclagen.) River du Loup, common, (Dr. Thomas.) Kent Co. New Brunswick, (Dr. Fowler). In the United States it seems to be confined to the northern portions, as it has not yet been noticed south of Pennsylvania. In Britain pastures and fields are its natural habitats. July.

2. **S. antirrhina,** Linn. *Snap-dragon catch-fly* Stem slender, erect, simple, or slightly branching above; a few of the upper internodes being viscid above the middle, and often covered with small flies. Leaves lanceolate, acute; upper ones linear, the margins slightly scabrous, Flowers few, on slender erect pedicels. Calyx ovoid, smooth and shining; teeth tipped with purple; petals reddish-purple, quite small, seldom seen expanded.

This plant delights in dry, rocky, or gravelly soil, and therefore may be sought for along rivers, on gravelly ridges or sandy plains, and among the Laurentian rocks of the north. It is of very wide

distribution, extending from the Atlantic to the Pacific, and from Florida in the South to North-eastern Ontario on the North. It seems to have been overlooked in Canada, as it is only noted from a few localities. Two miles west of Prescott, rare (B. Billings, Jr.) Galt, (Miss Crooks,) vicinity of Hamilton, (J. W. Buchan,) Bayfield River, Huron Co. (J. Gibson.) Kingston Mills, Niagara, and Malden (Dr. Maclagen). Abundant in Hastings, Northumberland and Peterboro Counties; Thunder Bay and Kaministiguia river; Sturgeon Lake, Dawson Route; Fort Edmonton and North Saskatchewan; Vancouver Islan l (J. Macoun). July.

3. **S. noctiflora,** Linn.—*Night-flowering Catch-fly.* Annual. Stems viscid, pubescent, 1°–3° high, many times forked, each branchlet terminated with a single flower, and a solitary flower in the axil of the fork. Lower leaves spatulate, middle ones lanceolate, upper linear, all ciliate, margined, rough, and hairy on both sides, with veins very pubescent. Flowers few, rather large, with long viscid peduncles, pale rose color or nearly white, expanding only at night, or during dark gloomy weather; sweet-scented. Calyx tube elongated, with leng subulate teeth, much swollen in fruit, with 10 connected ribs. Petals large, 2-parted, crowned.

Cultivated, also frequent on waste grounds. Introduced from Europe. Is met with most frequently on dry sandy or gravelly soil. Not reported from the Southern States. Very common at Prescott (B. Billings Jr.) Toronto (Prof. Hincks). Hamilton (Judge Logie). Near Goderich, Lake Huron (J. Gibson). Abundant on the clearings, Indian village, Arundel (D'Urbar). Kent Co. New Brunswick (Dr. Fowler). Kingston (Dr. Maclagen). Hastings and Northumberland Counties, and Owen Sound (J. Macoun).

4. **S. acaulis.** Linn. *Moss Campion.* Perennial. Cæspitose Stems short, 1–3 inches high, much branched and tufted. Leaves linear, flat, ciliate nearly the whole length, much crowded, nearly an inch long. Flowers solitary, sometimes sessile, at other times in a naked peduncle, very beautiful. Calyx campanulate, slightly inflated. Petals bright purple, notched or entire, crowned. This is an Arctic species, and not to be found within the exact limits of the St. Lawrence valley, but being found on the coast of Labrador we introduce it. The White Mountains of New Hampshire is its only station in

the Northern United States; but it extends throughout Arctic America to the Pacific, and down the Rocky Mountains as far as Lat. 40°, being observed on the mountains of Utah and Nevada. Greenland (R. Brown). Labrador (Brunet). Cariboo Mountains (J. Macoun).

5. **S. Armeria,** Linn. *Lobel's Catch-fly. Garden Catch-fly.* Annual. Stem branching, glutinous below each of the *upper* nodes. The whole plant very smooth and glaucous. Leaves ovate, lanceolate. Panicles repeatedly forked, with a single flower always in the fork. Flowers much crowded in corymbose cymes. Calyx club-shaped, purplish, 10-striate. Petals pink or purplish, notched and crowned with awl-shaped scales. Flowers opening in sunshine. Cultivated in gardens; introduced from Europe. Sparingly naturalized in the Northern States. Kent Co. New Brunswick (Dr. Fowler). Spontaneous in a few gardens at Belleville (J. Macoun). July to Sept.

6. **S. Virginica,** Linn. Perennial. Stems slender, 1°–2° high, nearly erect, slightly branching, viscid-pubescent, particularly above. Radical leaves spatulate with ciliate petioles; cauline ones oblong-lanceolate, remote, sessile. Flowers cymose, dichotomous, few-flowered, peduncled. Calyx campanulate, cylindrical, reflexed or nodding in fruit. Petals oblong, 2-cleft, deep crimson. Stamens and pistils exserted. Flowers very large and beautiful, bright-red or crimson; well suited for cultivation. Its range in the U. States is from western New York to Georgia. In Canada it is apparently confined to the south-western portion of Ontario, as it is not reported from any other quarter. Upper Canada (Hooker, Flora Boreali-Americana). Islands in Detroit River (Maclagen). June.

IV. LYCHNIS. Linn. Campion

Calyx monophyllous, cylindrical, bractless and coriaceous, with 5 elongated, linear, deciduous sepals. Petals 5, crownless, with border undivided. Stamens 10. Styles 2. Capsule 1-celled, opening by 5 teeth. Annual or perennial pubescent herbs, erect, dichotomous, with long linear leaves, and shining purple flowers in elongated peduncles.

1. **L. Githago,** Lam.—*Corn cockle.* (Agrostemma Githago, Lam.) annual. Stem 2°—3° high, forked above, dichotomous; whole

plant clothed with long soft hairs. Flowers large, bright purple. long peduncled. Calyx lobes very long, surpassing the flower, much like the upper leaves, falling off in fruit, and leaving the large seed-vessel exposed. Petals large, entire, crownless; limb obcordate, Seeds very abundant, black, detrimental to the quality of wheat-flower. A very common weed in wheat-fields, but much less abundant than in former years. It extends throughout the wheat-bearing region of Canada. Is abundant at Fort Francis, Fort Garry, Fort Edmonton and Vancouver Island, so that it has actually crossed the Continent. July.

2. **L. vespertina**, Smith.—(Lychnis dioica, Linn.) Biennial or perennial. Stem 1°—2° high, panicled above, pubescent, slightly viscid about the joints of the stem. Flowers dioecious, the fertile ones much the larger. Leaves ovate, or ovato-lanceolate, acuminate. Neither leaves nor flowers as large as those of *Silene noctiflora* which it very closely resembles. Our foreign specimens are more slender and not so pubescent as the one from which the present description is taken. Calyx sub-cylindrical or ovate, petals whitish. Cultivated on waste grounds. Very scarce in the U. States. Introduced from Europe. Prof. J. Gibson is the first who has reported the presence of this plant within the Dominion. It was found on grassy mounds in the Township of Stanley, Huron Co., about 12 miles S. of the embouchure of the Maitland.

3. **L. apetala**, Linn.—Perennial. Stem simple, pubescent. Calyx rather cylindrical, 10-striate, finally inflated and including the petals. Seeds arilled. (Hooker Fl. Bor. Am.) We have described this plant on the authority of Hooker, not having had an opportunity to examine specimens for ourselves. It can scarcely be said to be within our limits, but as Hooker reports it from the coast of Labrador we deem it advisable to give it a place in the present memoir. It is common in Arctic America, and has been detected on the Rocky Mountains of Colorado and Utah. Hooker gives Greenland and Labrador as stations. Bourgeau seems to have observed it on the Saskatchewan.

V. CERASTUIM, Linn. Mouse-ear Chickweed.

Calyx of 5, rarely 4 sepals. Cerolla of 5, rarely 4 petals, obcordate, or 2-cleft. Stamens generally 10, sometimes 5 or 4. Styles equal in number to the sepals, and opposite them. Capsule 1-celled cylindrical, elongated, bursting at the apex with 10 teeth, with numerous rough seeds. Flowers white, solitary or cymose. (Name from *keras* a horn from the rather long and curved capsules of many species).

(a.) Petals not larger than calyx. — C vulgatum. C. viscosum.

(b) Petals considerably larger than calyx — C. nutans. C. arvense. C oblongifolium. C. alpinum.

1. **C. vulgatum,** Linn.—*Mouse-ear chickweed.* Annual. Stems ascending, hirsute and clammy-hairy, pale-green. Leaves ovate or obovate, very obtuse, attenuated at the base, (almost petiolless). Flowers in close clusters. Pedicels very short, scarcely as long as the flowers. Sepals acute, rather longer than the petals. Capsule cylindrical, attenuate, twice longer than the calyx, curved upwards. Intro luced.

Waste places from Florida to Eastern Canada. Vicinity of Que. bec (Brunet). Common among grass at Hamilton's Farm, River Rouge (D'Urban). River du Loup (Dr. Thomas). In gardens at Kingston and at Fort William, Thunder Bay, Lake Superior. Lately reported from vicinity of Hamilton by J. M. Buchan Esq.

This species seems to be of very rare occurence in Ontario, and as yet, so far as Central Canada is concerned, is almost exclusively confined to the Eastern Province. It is very distinct from the next species in general appearance, though often confounded with it. The shape of the leaves, the erect stems, and the flowers in dense clusters, should enable the most commonplace observer readily to distinguish it. May—July.

2. **viscosum,** Linn.—*Larger mouse-ear chickweed.* Perennial. Stems hairy, viscid, spreading, much branched, greener than the last, and as a rule a much larger plant. Leaves lanceolate-oblong, rather acute. Bracts much smaller than in the last species. Flowers in loose cymes which are dichotomous—the solitary flower in the fork

always expanding first, at the same time differently from the others, in having a much more elongated capsule and peduncle. Petals equalling in size the calyx which is hardly half as long as the capsule. This species is certainly indigenous in Ontario, being found in many cases at great distances from cultivated grounds. Gray seems to think it is indigenous to the Northern U. States, and gives *fields* and *copses* as its habitats ; whilst Chapman, in his Flora of the Southern States cites only *fields*. It seems probable, therefore, that both in Canada and in the U. States we have two forms, the one introduced, the other indigenous.

Everywhere common at Prescott (Billings). Vicinity of Quebec (Brunet). Kent Co., New Brunswick (Dr. Fowler). City of Hamilton (Logie). Near Goderich (J. Gibson). Kingston and Amherstburg (Dr. Maclagen). Common in Central Canada, Toronto, Owen Sound. (J. Macoun). May—July.

3. C. nutans, RAF.—Annual, very clammy, pubescent. Stems erect, weak, grooved, branching only from the base, the internodes finally much larger than the leaves, from 6′-20′ high. Leaves oblong lanceolate, the lower ones spatulate, acute, Flowers in loose open cymes, much elongated owing to the length of the filiform nodding pedicels. *Petals longer than the Calyx*, bifid at the apex. Capsules three times as long as the calyx, incurved, with a silvery hue when old. Commences to flower when very young, and continues in bloom the greater part of the summer. In July the nodes and pedicels become much elongated, being frequently observed two inches and more in length. Low moist grounds from Hudson Bay to Louisiana, and West to Vancouver and Oregon. In Canada it seems to have been generally overlooked ; very abundant in the vicinity of Belleville on wet limestone shingle ; Prince Arthur's Landing ; Big Lake, near Edmonton ; Little slave Lake and Vancouver Island, (J. Macoun.)

4. C. arvense. LINN.—*Field Chickweed.* Stems 2′-10′ high, decumbent at the base, retrorsely pubescent. Leaves linear, or linear-lanceolate, acute, often fascicled in the axils, longer than the internodes near the base of the stem, more or less pubescent. Flowers large and white ; cyme few-flowered, on a long peduncle which is generally 4-flowered. Petals large, obcordate, twice the length of the obtuse sepals. Capsule oblong, scarcely exceeding the length of

the sepals. On rocky banks, hills and pastures, from Canada to Georgia and west to the Pacific; River du Loup and Gaspe', (Brunet), Mary Island, Islands in Detroit River, (Dr. Maclagen.) Vicinity of Hamilton, (Buchan.) Labrador, (Butler.) Kent Co. New Brunswick, (Dr. Fowler.) The latter reports "capsule much longer than the calyx." This is probably the next species *C. oblongifolium.* Rocky banks of the Moira, Trent, and Gull rivers; Sandy Fields, Toronto; Point Aux Pins, entrance to Lake Superior; Dawson Route, Lake of the Woods; Plains west of Fort Garry; Edmonton, Sasketchewan River; Little Slave Lake; Dunvegan, Peace River; Fort St. James, New Caledonia and Vancouver Island, (J. Maconn,) May--Aug.

5. C. oblongifolium. Torr.—Perennial. Stems erect or declined, branching, viscid above, stouter and smoother than *C. arvense.* Leaves oblong-lanceolate, or ovate, nearly an inch long, shorter than the internodes, nearly glabrous. Cymes twice or thrice dichotomous; peduncles viscid. Petals obovate, 2-cleft, twice as long as the sepals, white and spreading. Sepals clammy-pubescent. Capsule twice as long as the calyx. This species is easily distinguished from *C. arvense* by its leaves, capsule and petals. In seems to be confined, in its geographical range, to a comparatively small area. In the U. States it is circumscribed by New York, Virginia and Illinois. Whilst in Canada it has only been reported from the vicinity of Amherstburg by Dr. Maclagen, and lately by J. M. Buchan, Esq., from the vicinity of Hamilton. April—June.

6. C. alpinum Linn.—"Perennial; silky, hirsute. Stems 4--6 inches high, few-flowered; leaves elliptical-ovate; peduncles more or less elongated; petals bifid at the point, twice the length of the scariously margined and hairy sepals," (Torrey and Gray.) Capsule nearly twice as long as the calyx. In N. America it extends from Greenland to the islands of Sitka and New Archangel on the west, and southward, on the authority of Brunet, as far as the coast of Labrador. July-Aug.

VI. STELLARIA, Linn. Chickweed.

Calyx of 4-5 sepals, somewhat connected at the base. Cerolla of of 4-5 petals deeply 2-parted, often perigynous, sometimes wanting. Stamens normally 10, sometimes fewer. Styles 3, sometimes 4 or 5,

opposite the sepals. Capsule ovoid, membranous, 1-celled, 3- (sometimes 4) valved, each valve usually 2-parted at the apex. Seeds numerous, naked. Flowers white, in dichotomons cymes or solitary, terminal, in appearance axillary. (Name from *Stella* a Star, from the stellate appearance of the Corolla.)

1. **S. media.** Smith.—*Chickweed.* Annual, stems branching, decumbent, jointed, brittle and soft, remarkably distinguished by a hairy ridge. Lower leaves on hairy petioles almost heart-shaped at the base; upper ones ovate, acute, glabrous. Flowers small and white. Petals shorter than the sepals, 2-parted. Calyx hairy. Pedicels deflexed in fruit. Very abundant in old gardens where its seeds are much relished by birds and poultry. Very frequent in all parts of the U. States and Canada. It delights in damp rich soils, and seems as much at home in the gardens of Florida as in the cultivated lands around the posts in the valley of the McKenzie.

2. **S. longifolia,** Muhl.—Perennial. Stems soft and branching, very weak and brittle, supporting themselves on other plants. Leaves opposite, linear, the lower ones often lanceolate, acute, 1′—2′ long, spreading to a right angle with the stem. Cymes many-flowered, naked, divaricate, at length lateral, with lanceolate scarious bracts. Pedicels long and spreading, reflexed. Petals white, a little longer than the 3-veined sepals. Capsule globous, about the length of the calyx. Stems often 18 inches high, retrorsely scabrous. The whole plant has much the habit of *Galium trifidum* or *Campanula aparinoides*, two species with which it associates.

From Virginia to sub-Arctic America, and westward to Sitka and Oregon (Torrey & Gray). Kent Co. New Brunswick, (Dr. Fowler). Prescott Junction and Ottawa, (Billings.) Beasley's Hollow, (Loggie.) Chippewa, Malden, (Dr. Maclagen). Vicinity of London, (Saunders). Near the Bayfield and Maitland Rivers, (J. Gibson.) Low grassy places along streams, beaver meadows, &c. Common in Central Canada, Sault Ste Marie, Rain River, Little Slave Lake, Dunvegan on Peace River, and Fort Assinaboine on the Athabasca, (J. Maconn.) June—July.

3. **S. longipes,** Goldie.—Perennial. Stems procumbent at the base, with erect shining or glaucous-green branches, very smooth and rigid. Leaves (in our specimens) more or less spreading, linear

or linear-lanceolate, acute, broadest at the base. Peduncles cymous. Pedicels erect, filiform, the terminal one much the longest, with ovate membranous bracts at the base. Petals 2-parted, white, considerably longer than the calyx. This species has a very beautiful appearance when associated with *Cerastium arvense* on rocky banks during the latter part of May and beginning of June. In its many varieties it extends from Maine to Wisconsin, thence northward through Canada to the Arctic Sea, and westward to the Pacific coast; but in no locality seems to be very common. Vicinity of Quebec, (Brunet). Restiguiche Co., New Brunswick, (Dr. Fowler), "a reduced form." On rocky ground, vicinity of Belleville; north shore of Lake Superior; Victoria Missions, Saskatchewan River; Fort Assinaboine, Athabasca River; Little Slave Lake; Dunvegan, Peace River; Fort St. James, Stewart's Lake, British Columbia; Cariboo Mountains, near Barkerville, Vancouver's Island, (J. Macoun.) June—Aug.

4. S. uliginosa, Murr.—*Bog Stickwort*, Perennial; nearly smooth. Stems 6′—12′ long, weak and very slender. Cymes lateral, caused by the prolongation of the branching stem, nearly sessile. Leaves ovate-lanceolate, acute, veined. Petals bifid, almost as long as the sepals. Flowers very small, almost obscured by the leaves. Capsule ovoid, as long as the calyx. Rather rare, or generally overlooked owing to its inconspicuous flowers. Maryland to Maine, and westward, through Canada to the Rocky Mountains. In springs, Moosepath, New Brunswick, (C. F. Mathews). Kent Co. New Brunswick, (Dr. Fowler.) May. (S. aquatica, Pollich, Labrœa uliginosa, Hooker.)

5. S. gracilis, Richardson.—Perennial, growing in tufts. Stems glabrous, weak and branching, about 8 inches high. Leaves lanceolate, spreading, succulent, upper ones slightly ciliate-margined. Peduncle solitary, axillary or terminal, 1-flowered. Pedicel generally over an inch long, spreading. Petals 2-parted, slightly longer than the scarious-margined, glabrous, acute sepals. In general appearance this species resembles wide-leaved varieties of *S. borealis*, but its mode of inflorescence is quite different *in detail*. Hudson's Bay, Cumberland House, (Richardson.) Pie Island, Thunder Bay, growing in tufts close to the water. July 15th, 1869.

6. S. **borealis**, Bigelow.—Perennial. Stems glabrous and flaccid, weak and spreading, many times forked, the lateral branches producing flowers which are petaliferous in July. Leaves veinless, 1-nerved, oblong-lanceolate, acute, about an inch long, upper ones often reduced to bracts. Peduncles axillary and terminal, 1-flowered, scarcely an inch long. Petals (often none) 2-parted, almost equal to the veinless acute sepals. The whole plant is weak and slender, supporting itself on the grass and other plants among which it grows. It always prefers cool bogs or swamps, while *S. longifolia* more readily flourishes in drier localities. New Hampshire and New York to Arctic America, thence west and south through Oregon and California to the Pacific Coast. (S. Watson in King's Report.) Kent Co. New Brunswick, (Dr. Fowler). Anticosti and River Saguenay, (Brunet). Bevin's Lake, Montcalm, River Rouge, (D'Urban). Mt. Johnson, Quebec, (Dr. Maclagen). Cold Swamps, Hasting's Co; Thunder Bay, Lake Superior; marshes at the mouth of the Kaministiguia; Little Slave Lake; Dunvegan, Peace River; Cariboo Mountains, and a form from Vancouver's Island, (J. Macoun.) June—July.

7. S. **humifusa**, Rottboell.—Annual. Stems glabrous, 2′–3′ high, procumbent, branched, leaves ovate, sessile, fleshy. Peduncle solitary, axillary or terminal, short, 1-flowered. Petals 2-parted, rather longer than the acutish nerveless sepals. (Hooker in Parry's 2d voyage, app. p 391, and H. Bor. Am. 1 p. 97.) Greenland to the Arctic Sea and west to Sitka, (Torr. & Gray.) York Co. New Brunswick, (Dr. Fowler.) Kamouraska, (Dr. Maclagen.)

VII. ARENARIA, Linn, Sandwort.

Calyx of 5 spreading sepals. Cerolla of 5 petals, undivided, but sometimes barely notched. Stamens 10. Styles 3. Capsule short, 3-valved, valves usually 2-parted. Seeds few or many. Leaves sessile. Flowers white and terminal. (Name from *Arena*, sand; most of the species growing in sandy localities.)

1. A. **serpyllifolia**, Linn.—Annual. Stems diffusely branched, retrorsely pubescent, 2′—8′ high. Leaves quite small, sessile, ovate, acute, ciliate-margined. Flowers white, on short pedicels, from the forkings of the upper part of the stem or axils of the leaves. Petals scarcely as long as the sepals, oval. Sepals 3-5 ner-

ved, acuminate, hairy. Capsule pointed, 6-toothed. Sandy fields and woodlands ; easily distinguished by its small leaves, branching and pubescent stems. Introduced, though at times apparently indigenous. Waste places from Florida to Massachusetts (Torrey and Gray). Labrador (Brunet). Kent Co. New Brunswick (Dr. Fowler). On sandy places by the sea, River du Loup (Dr. Thomas). Woods and fields near Ottawa (Billings). Near London (Saunders). Hamilton (Buchan). Huron Co., Ont. (J. Gibson). Owen Sound (J. Macoun). June.

2. **A stricta**. Michaux (Alsine Michauxii, Fenzl.) Perennial. Stems erect, 5′-12′ high, or diffusely spreading from a small root. Leaves subulate, setaceous, upper ones reduced to bracts, 1-nerved, very much fascicled in the axils, almost appearing whorled, sharp-pointed and rigid, sometimes erect, at other times spreading. Cymes few or many-flowered, the long slender branches spreading or erect. Petals white, oblong-ovate, twice the length of the rigid, ovate, very acute *3-prominently-ribbed* sepals. Rocks and barren ground from S. Carolina and Georgia to the Arctic Sea (Torrey & Gray; Hooker). Vermont to Wisconsin and Kentucky (Gray). Great Western Railway tract near London (Saunders). Huron Co. (J. Gibson). North shore of Lake Superior (Agassiz). Common in rocky fields near Belleville, along the Moira and Trent rivers, and Bay of Quinte′. Shores of Rice Lake, and on the Rice Lake Plains ; Vicinity of Toronto; Red Bay, Bruce Peninsula, Lake Huron ; Pic River, N. E. shore of Superior ; Lake of the Woods (J. Macoun). May—July.

3. **A. lateriflora**, Linn.—(Moehringia lateriflora, Linn) Perennial. Stem erect, slender, minutely pubescent, simple, or branched from near the base. Leaves oval or oblong, obtuse, $\frac{1}{2}$′-1′ long, pale green, punctate, hairy on the margins and midrib below. Peduncles lateral and terminal, generally 3-flowered, each of the outer ones having two bracteoles above the centre of the pedicel. Petals white, large, obtuse, (flowers fully $\frac{1}{3}$ of an inch wide when expanded) fully twice the length of the blunt sepals. A very beautiful species, retaining its color when dry. In damp shady places from N. Lat. 40° to the Arctic Circle, (Torr. & Gray.) Gravelly shores, Rhode Island, Pennsylvania to Wisconsin and northward, (Gray.) Labrador, Restigouche, (Brunet.) Kent Co. New Brunswick, (Dr. Fowler.)

Nicolet, Kingston, Chippewa, (Dr. Maclagen). Hamilton, (Buchan.) River du Loup, (Dr. Thomas.) Banks of the Rivers Moira and Trent, (J. Macoun.) June.

4. **A. peploides**, LINN.—(Honkenia peploides, Ehrh.) *Sea-side sandwort* Perennial. Stems creeping extensively in the sand of the sea shore, and throwing up erect branches at intervals, and at other times forming tufts. Leaves and stems very fleshy; leaves ovate, half-clasping, acute or mucronate, from $\frac{1}{2}'$--$1'$ long, nearly half as wide, mostly shorter than the internodes. Flowers small, axillary, on short peduncles. Sepals veinless, exceeding in length the white petals. Atlantic coast from N. Lat. 40° to Labrador and the Arctic Circle. (Torr. & Gray.) Sands of the sea shore from New Jersey to Maine and northward, (Gray.) Labrador, (Brunet.) Kent Co. New Brunswick, (Dr. Fowler.) Sea Shore River du Loup. (Dr. Thomas.) July.

5. **A. rubella**, HOOK.—Var **hirta**, WORMSKIOLD. *Alpine sandwort.* Perennial. Stems glabrous or pubescent, $2'$--$3'$ high. Leaves linear, subulate, obtuse, 2-sulcate, minutely hirsute. Stems 2--3 flowered. Sepals 3-nerved, acute, shorter than the capsule. Petals oblong, a little shorter than the calyx. (Torr. & Gray in Wormsk. in fl. Dan. t. 1646; D. C. prodr. 1. p. 405.) Kotzebue Sound, (Beechey.) Greenland, (Torr. & Gray.) Labrador, Cape Charles, (Brunet.) July.

6. **A. arctica**, STEVEN.—Perennial, cæspitose. Leaves linear-subulate, obtuse, fleshy, margin minutely ciliate. Peduncles glandular, pubescent, 1- (rarely 2-3) flowered. Petals about twice the length of the very obtuse 3-nerved sepals. (Torr. & Gray, in Stev. in D. C. prodr. 1. p. 404.) Arctic coast from Greenland to Behring's Strait. (Torr. & Gray.) A variety has been found on the mountains of Colorado and Utah by S. Watson of King's expedition. Reported as having been detected on the shore of Muscoka Lake by Prof. Hincks. Its occurence, however, in that locality is exceedingly doubtful, but in deference to his authority we give it a place in the present memoir.

7. **A. Greenlandica**, SPRENG,—(Stellaria Greenlandica, Retz.) Plant cæspitose, glabrous. Stems low, decumbent at the base, 1-5 flowered. Leaves very narrowly linear, obtuse. Pedicels filiform. (Spreng. Syst. 2. p. 402.) Summit of the Shawangank, Catskill, and

Adirondack Mts., N. York ; on all the higher mts. of New England, and northward ; Alpine or Subalpine, (Gray 5th Ed.) Greenland, (Vahl. in herb. Schweinitz) Labrador, (Herb. Schweinitz.) July and Aug.

VIII. SAGINA, Linn. Pearlwort.

Calyx of 4–5 sepals. Corolla of 4–5 petals, entire, shorter than the calyx, sometimes wanting. Stamens 4-10. Capsule 1-celled, 4-5, valved and many seeded. Spreading herbs with subulate leaves, which are often fascicled in the axils, and small white flowers.

1. **S. procumbens,** Linn. Perennial. A small weed with slender, creeping stems 3′-4′ long. Leaves very small, linear, thread-shaped, mucronate-pointed, connate or opposite. Flowers white and green, on peduncles longer than the leaves, axillary. Peduncle often hooked after flowering. Petals shorter than the broadly-ovate, obtuse sepals. Capsule twice the length of the calyx. Petals often wanting. Rhode Island to S. Carolina along the coast (A. Wood). Oregon, (Dr. Scouler). Kent Co., New Brunswick (Dr. Fowler.) Ontario (Dr. Maclagen). June—Aug.

2. **S. nodosa** Fenzl. (Spergula nodosa, Linn.) Perennial. Stems tufted, ascending 3′-5′ high, glabrous. Lower leaves thread-like, nearly an inch long, the upper ones awl-shaped and very small, with fascicles of very minute ones in their axils, so that the branchlets appear knotty. Flowers large for the size of the plant. Petals much longer than the sepals. Stamens 10, petals and sepals 5. Upper Canada to the Arctic Sea and N. W. coast (Hooker.) Coast of Maine, New Hampshire, also Lake Superior and northward (Gray). North shore of Lake Superior (Agassiz). Island of St. Ignace ; Agate Island ; Michipicotin Island and along the N. E. coast of Lake Superior (J. Macoun).

This species is easily distinguished from *S. procumbens* by its very small upper leaves and large white flowers ; the former having large leaves and very inconspicuous flowers. July.

IX. SPERGULARIA, Pers. Red Sandwort.

Calyx of 5 sepals. Corolla of 5 entire petals. Stamens 2-10. Styles and valves of the capsule generally 3, but sometimes 5. Spreading and slender-leaved herbs growing generally on, or in the neighborhood of, the sea coast or salt marshes, with red or rose-colored flowers.

1. **S. rubra,** Pers. Var. **campestris,** Gray (Arenaria rubra, Linn.) Annual, Stems prostrate slender, nearly glabrous except on the summits. Leaves filiform. Peduncles and sepals glandular-pubescent. Stipules triangular awl-shaped. Pods and pink-red corolla small, hardly equalling the calyx. Sandy or generally dry soil along the coast from New England to Virginia. Seldom maritime (Gray). Halifax, Nova Scotia (Dr. Fowler). Hamilton, Ont. (Buchan). May—October.

2. **S. salina,** Prest. Annual. Stems larger, more decidedly fleshy, and more erect than No. 1. Leaves fleshy, longer than the internodes. Peduncles rarely longer than the pod, which is longer than the calyx. Stipules ovate. Petals pale. Seeds marginless, or very narrowly margined. Brackish lands &c. along the coast from New England to Virginia and southward (Gray); South to Florida (Chapman). St. Johns, New Brunswick (C. F. Mathews). Kent Co. New Brunswick (Dr. Fowler). River du Loup, Labrador (Brunet).

3. **S. media,** Presl. Annual. Distinguished from the last mainly by its smooth seeds, either winged or wingless. Peduncles equalling or exceeding the pod, which is 2′-5′ long, and a little exceeding the calyx (Gray's Manual Ed. 5).

On the coast and in salt marshes and sands from Florida to Newfoundland. In Central British America from Lake Winnepeg to Bear Lake, and in the United States from Washington Territory to California. Found at a salt spring in Parley's Park, Wahsatch Mountains, Utah (S. Watson, in King's Expedition). Kent Co. New Brunswick (Dr. Fowler).

X. SPERGULA, Linn. Spurrey.

1. **S. arvensis,** Linn. *Corn spurrey.* Annual. Stems 5′-15′ high, swollen at the joints, much branched. Leaves linear-subulate, 1′-2′ long, a little pubescent, in two fascicles from each joint appearing as if whorled. Two minute stipules under each joint. "Cyme forked; the terminal (central) peduncles bending down as the fruit ripens." Petals white, longer than the calyx; capsule twice as long. Seeds many, membranously margined. Sandy fields from Maine to Florida. Introduced. Fields and pastures St. Joachim (Brunet). Kent Co. New Brunswick (Dr. Fowler). St. John, Quebec, (Dr.

Maclagen). According to Dr. Fowler it is a most troublesome weed in New Bronswick. Not as yet reported from Ontario. May—Aug.

XI. SCLERANTHUS, Linn. Knawel.

1. **S. annuus**, Linn. *Knawel.*—Annual. Stems branching dichotomously; slender, slightly pubescent, straggling. Leaves linear cabulate, keeled, opposite, partially united at the base by a membranous-fringed margin. Flowers inconspicuous, greenish, sessile, in axillary fascicles. Stipules none; petals none. Calyx ribbed with 5 acute segments. Stamens generally 10. Styles 2 and distinct. In our specimens from New Jersey, the calyx teeth are erect in fruit and have a white membranous margin. Dry fields, New England and middle States (A. Wood). Naturalized. Three Rivers, Quebec, (Dr. Maclagen). July.

XII. MOLLUGO, Linn. Indian Chickweed.

1. **M. verticillata**, Linn. Annual. Stem branched, lying flat upon the ground, jointed, forming a roundish bunch. Leaves cruciform, the upper ones lanceolate, in whorls of 4-8 leaves; in these whorls the single 1-flowered pedicels forming a sessile umbel. Flowers small and white. Petals none. Stamens mostly 3. Dry places throughout North America (Torr. & Gray). The stems lie flat on the ground and spread in every direction, giving the plant a circular appearance. At every joint is a whorl of spatulate leaves, and a number of 1-flowered pedicels, which give an umbel-like appearance to each whorl. A tyro in Botany could scarcely recognize in this or the preceding species, the characters of the order under review. Borders of rivers near Montreal (Brunet). Malden, Ontario (Dr. Maclagen). July—Sept.